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MAY
1953



SPINNING ROOM
IN JAPANESE COTTON MILL

Foreign Agriculture

Vol. XVII

MAY 1953

No. 5

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FRONT COVER

Spinning Room in Japanese Cotton Mill

Row on row, new long-draft spinning frames fill this section of a large Japanese cotton mill.

BACK COVER

Japanese Imports of Cotton and Exports of Cotton Products

To meet the cost of its raw cotton imports, Japan depends heavily on exports of cotton products—normally its largest earner of foreign exchange.

In volume, cotton textile exports represent only a part of the cotton imports, the remainder being available for domestic consumers. In value, however, the exports of cotton textiles in the 5 years 1946-50 balanced the cost of all raw cotton imported in that period.

Credit for photos is given as follows: pp. 91-92, TCI, Iran; pp. 94-95, Dr. Harold Mowry; pp. 101, 103, Dr. W. M. Reid and Dr. Ahmed Dardiri.

NEWS NOTES

International Wheat Agreement

A new International Wheat Agreement, to replace the 4-year Agreement that is due to expire on July 31, has been opened to ratification by signatory countries as a result of a conference held in Washington, D. C. from January 30 to April 9.

The new Agreement will go into effect on August 1 if ratified by enough countries. Forty-six nations (four exporters and 42 importers) are participants in the expiring 1949-53 Agreement. At least 50 percent of voting strength of member countries must favor ratification if the new Agreement is to go into effect. Voting strength is based on annual quotas of wheat assigned to each member nation under the Agreement.

The new Agreement calls for 3 years' duration. The new price range is \$2.05 a bushel maximum and \$1.55 minimum, compared with the old Agreement range of \$1.80 maximum and \$1.20 minimum.

Total quantity of wheat scheduled to move each year under the new Agreement is 595,542,052 bushels, as compared with 580,916,695 bushels this last year of the expiring Agreement.

The United States has an assigned export quantity of 270,174,615 bushels under the new Agreement, as compared with 253,127,712 bushels this last year of the expiring arrangement.

A meeting of the International Wheat Council will be held in London this summer when final arrangement, including any adjustments of assigned quantities, will be made if it appears that the new Agreement will go into effect.

FOREIGN AGRICULTURE

ALICE FRAY NELSON, EDITOR

A monthly publication of the Foreign Agricultural Service of the United States Department of Agriculture, Washington, D. C. The matter contained herein is published by direction of the Secretary of Agriculture as administrative information required for proper transaction of the public business. The printing of this publication has been approved by the Director of the Bureau of the Budget (November 1, 1950). Copies may be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., at 15 cents per copy, or by subscription at the rate of \$1.50 per year, domestic; \$2.00 per year, foreign. Postage stamps will not be accepted in payment.

Japan's Cotton Textile Industry

The sun rises again on Japan's cotton mills.

by A. W. PALMER



Japan, largest user of American cotton abroad and leading exporter of cotton goods to the world, saw its cotton mills all but ruined in the Second World War. But though only 7 years have passed, those mills have been rebuilt. Today, Japan's spindles and looms are beyond question the newest and most modern of any major manufacturing country and geared to the highly economical production of cotton goods. Paradoxically, the industry finds itself handicapped by its own efficiency, as, one after another, textile importing countries have limited their imports of Japanese cloth. Efforts are being made to solve the problems growing out of the international competition among cotton sellers. Meanwhile the Government of Japan, hoping to make secure its access to markets, has applied for participation in the General Agreement on Tariffs and Trade.

The rise of Japan as a cotton-manufacturing nation and as a merchant of cotton goods has focused interest on developments in that country from the First World War onward. Within two decades following 1914, Japan, starting with less than 2½ million spindles and producing hardly more cotton yarn and cloth than it needed at home, achieved first place in point of volume among textile exporters. Within this time as well, Japan became the largest user abroad of American-grown cotton.

With the Second World War all this came to an end. In 1945 Japan emerged from the conflict with its trade shattered, its mills dismantled, and its raw material supplies exhausted. Now in less than 8 years, the industry has been rebuilt, leadership in textile exports has been regained, and Japan is again a major raw cotton importer.

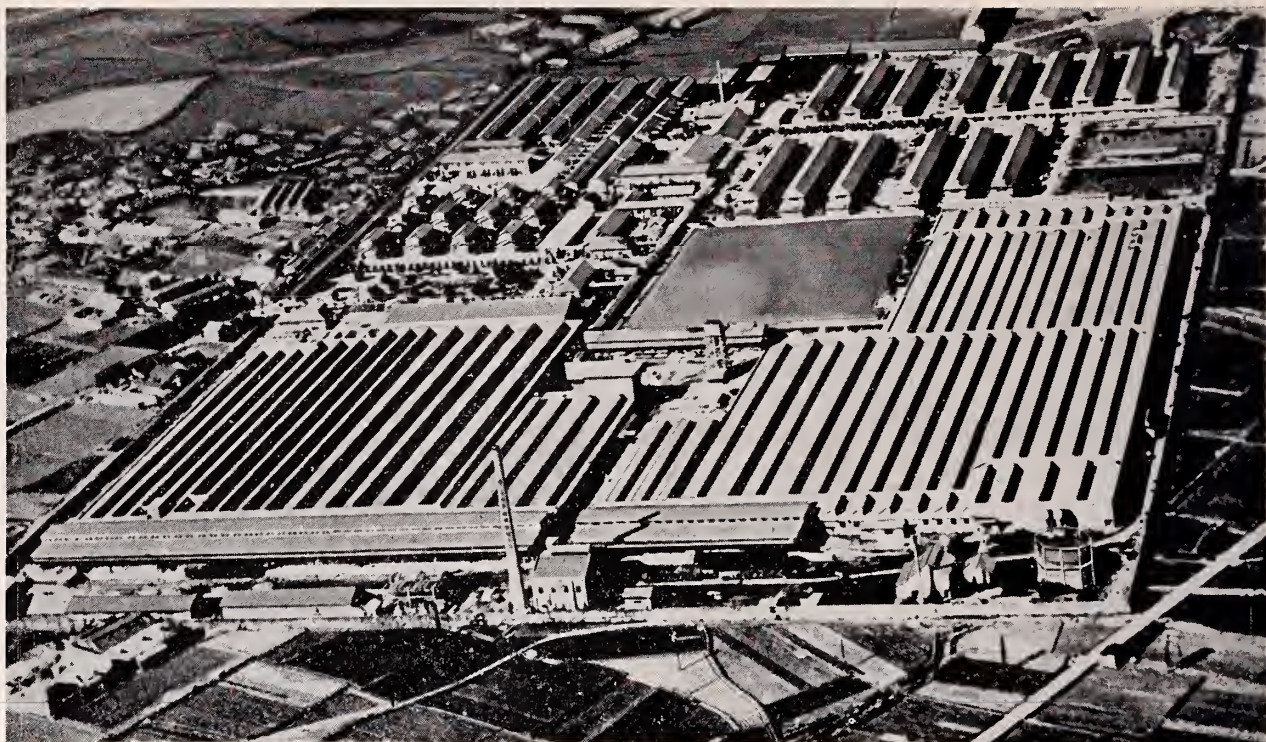
Japan's phenomenal progress in prewar years was based on the ability of its mills to produce goods at prices that other sellers could not meet. This advantage was mainly due to two factors. One is the near full-time operation of mills and the rapid amortization of equipment. Japanese production managers early learned the economies of multiple-shift operation and of replacing obsolescent ma-

chines with the latest and most efficient models. The second is the unique method of recruiting and maintaining mill staffs. More than 80 percent of the employed personnel are young women, most of them from farm families; these young women are interested in working the 1 to 2 years necessary to accumulate a dowry before returning to their homes to marry. While employed in the mills they are housed in company-owned dormitories in the mill compounds and take their meals in large dining halls also operated by the companies. Facilities for medical care and recreation are provided. With these advantages of mill employment and with the limited opportunities open to the workers elsewhere, management experiences no difficulty in attracting capable and interested workers at wage rates that by Western standards seem low.

Japan's cotton mills are located in the Kansai District of Honshu Island, the greatest concentration being about the modern industrial city, Osaka. Osaka is in fact the textile capital of the country, for here are located the head offices not only of the major manufacturing companies but also of the raw cotton importers and the textile-exporting firms. Here also are headquarters of the important trade associations, the All Japan Cotton Spinners' Association, the Japan Cotton Traders' Association, and the Sampin Exchange. Twenty miles around the curving shore of Osaka Bay is Kobe, the principal port of entry for Japan's raw cotton imports. Kobe's dockside warehouses and unloading cranes remind the visitor of their counterparts in American ports, where cotton is loaded for its month-long voyage across the Pacific.

Japan's first cotton mill was built in 1868, but it was not until after the turn of the century that development of the industry became important. Well along toward the beginning of World War I, Japan was in fact a considerable importer of cotton goods. From that time onward, however, expansion was rapid. By the end of the war Japan had gained the trade of China, amounting then to some 400

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The typical Japanese cotton mill is complete with attractive living quarters, gardens, and recreational facilities, as well as with latest model machinery, power plant, and warehouse.

million yards or more a year. From this nearby beginning the trade spread south, then westward into the countries of the Indian Ocean, and onward to Africa, the Mediterranean, and Latin America. By the early 1930's Japan's goods were offered throughout the world, and in 1934 Japan stood in first place among the cotton goods exporting countries of the world.

Notwithstanding this attainment, the industry in terms of its physical plant was never large. The maximum number of spindles in place in prewar years was approximately 13 million. Of these only about 8 million were operated at one time; the others were sealed off to insure full-time operation to the spindles in use.

The rapid expansion of Japanese textile trade was countered from 1934 onward by restrictive measures prompted by the interest of competing exporters in their own self-preservation. By 1936, Japanese participation had been limited by quantitative restrictions in the markets of 40 countries and by tariff preferences in 16 others. Two-thirds or more of Japanese trade was affected. Under these conditions mill capacity was reduced somewhat, and in 1940 only about 7 million spindles were operat-

ing in the mills of 70 companies. In that year, however, the industry moved to strengthen its position through consolidations that concentrated all of its physical plant in the hands of 10 strong combines—the Big Ten as they are known.

The industry's downfall in wartime came about, remarkably enough, not so much through hostile military action as in consequence of orders from Japan's own military authorities. Cotton mills were not themselves military targets; such direct damage as was suffered was incidental to attacks on neighboring targets. But anticipating the need of sheltered space, the Japanese armed services ordered the machines to be cleared from the mills and placed out of doors, where the ravages of weather quickly reduced them to scrap. So it was that at the war's end, barely more than a million spindles were left in operable condition, with another million suitable for reconditioning.

It is from this state that the vital new industry has risen. A total of some 7½ million spindles are again in place, with a corresponding number of looms in what, taken as a whole, is beyond question the newest and most modern cotton industry in the world. To the Big Ten have been added some 58

new cotton spinning companies with well over 2 million spindles, besides a considerable number of small enterprises spinning other materials as well as cotton. Nearly all of the new equipment has been produced in Japan by the country's own textile-machine industry. Taking into account the advantages of modernization, it may be considered that the capacity of the restored industry is equal to, if not greater than, that of the greatest number of spindles operated at any one time in prewar years.

A major driving force in the rebuilding of the cotton industry's physical plant has been, of course, the necessity to recover the earning power of export trade. In this, Japan was helped substantially by the pent-up demand for cotton textiles that had accumulated over much of the world during the war. To take advantage of this opportunity in the early postwar years when productive capacity was still low, Japan severely restricted its own consumption. While there has been a considerable relaxation of restrictions within the past year, per

capita use of cotton goods in Japan as late as 1951 was less than 3 pounds, compared with a normal prewar consumption about four times as great. Self-denial brought its reward, however, in the recovery of export trade. With its production restored, Japan in 1951 resumed its prewar position as leader among the world's cotton goods exporters, though at a level much lower than before.

Whatever one's viewpoint, the reestablishment of Japan's cotton-textile industry must be recognized as an outstanding achievement. Cotton manufacturing is the largest and most important of Japan's industries. Its restoration means employment for many thousands of mill operatives besides the numerous workers in the ancillary fields of merchandising, shipping, and banking. It means also that Japan can hope again to earn by its cotton goods exports a substantial part of the foreign currencies needed to pay for the imports of food, of raw materials, and of fuel that its people and its industries require. To a country of some 85 million people, living on a land area of which only 15 million acres



Loaded to the hatch with cotton for Japan's whirling spindles, an American freighter arrives in the port of Kobe.

are tillable and faced with the problems of a rapidly growing population, these considerations are vital.

In those nations that vie with Japan for shares of the world's cotton textile export trade, however, misgivings are evident. There, reconstructed Japan is seen more than ever a formidable contender, its advantage in labor costs enhanced by the super-efficiency of its modern textile plant. Industrial leaders in those countries point to the long decline in volume of the international trade in cotton textiles concurrent with the growth of textile manufacturing in countries that formerly imported. They note that this trend set in at the outset of the First World War, and that only a modest and perhaps temporary upturn has taken place since the depression years of the 1930's. They warn of possible overexpectations of trade and of disappointments that may follow the overexpansion of plant. Some go farther and suggest the possibility of finding a basis of accommodation in the allocation of international textile trade among the competing nations. Meanwhile Japan has again found doors closing against its cloth exports.

In numerous meetings over recent years cotton industry leaders of the major countries concerned have sought to resolve the issue of international competition. Latest of such efforts was that made

in the International Textile Industry Conference meeting in London and Buxton, England, in September 1952. There, proposals for the allocation among exporters of the world's cotton textile trade met counterproposals for freer competition. The most tangible results were agreement to cooperate for the improvement of current trade information and for the promotion of the world's cotton-textile trade with the hope that room will be made for all the competitors.

On its own behalf Japan has sought admission as a contracting party to the General Agreement on Tariffs and Trade, hoping thereby to obtain most-favored-nation treatment for its exports in important textile buying markets. This application is now receiving consideration. Simultaneously negotiations are going forward with the United Kingdom for an Anglo-Japanese Payments Agreement and with the United States for a Treaty of Friendship, Commerce, and Navigation.

Thus though the issue remains as yet unresolved, the directions in which a solution may be found are indicated. On the outcome may depend in large measure the future of Japan's newly reconstructed cotton industry. And on it, too, may largely depend the future pattern of international raw cotton trade.



Cotton-mill workers enjoy a game of volleyball in their leisure time. In quieter hours they may gather in a pleasant tearoom.



Smoke rises from charcoal kilns scattered throughout Iran's Caspian forest, which until recently has stood in primeval condition.

Forest Conservation for Iran

By HENRY S. KERNAN

Oddly enough, Iran, popularly thought of as an arid plateau, is the home of one of the world's finest hardwood forests, the Caspian. It covers about 8 million acres in the far north of Iran and is the only dense, highly productive forest in the Middle East today. Great tracts of the forest still stand in almost primeval condition, for, until the outbreak of World War II, it was relatively untouched. But during and since the war the rising economic activity of Iran has made increasing demands upon the forest resources, and now cutting is working back from the highways and up the mountainsides. And the cutting is indiscriminate. This forest, which could become very productive and valuable, is facing destruction as rapid and as thorough as that which has wrecked so many other wooded areas.

Recognizing the urgent need for forest management, not only of its Caspian forest but of the other wooded areas in the country as well, the Iranian Government created and manned a Forest Service in the early 1940's. But forest conservation and management were new to the country and the problems have been many. There is hope, however, that

solutions to the basic ones, at least, will be hastened now that the assistance of foresters from countries with long experience in forest management has been made available by the Food and Agriculture Organization of the United Nations and under Point Four.

Of immediate concern are the forest industries, for they constitute a drain on the resources out of all proportion to their revenues. Annual output of lumber is only about 28 million board feet consisting of rough, green lumber, some railway ties, and some wood sawn and hewn by hand for barrel staves and furniture stock. The charcoal industry consumes 20 million tons of wood a year—45 times as much as the lumber industry. Of every 20 tons of wood cut for charcoal, barely 1 ton reaches the market. Tools are so inadequate that often large trees are cut and only the branches used. The kilns—about 10,000 of them in the Caspian forest alone—are not efficient and the charcoal yield is very low. Each kiln represents the permanent destruction of

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8 to 10 acres of forest, and only a nominal revenue to the landowner. Living conditions for the workers are poor, and the woodcutters try to increase their means by grazing a flock of goats on the cut-over area around the kiln. They even attempt to increase the forage by girdling and burning the base of trees too large for their tools to cut. No woodland can bear up against the combined force of cutting, grazing, girdling, and burning.

Moreover, as the watershed cover, which protects the headwaters of streams crossing the fertile and productive agricultural area below, is destroyed, the problems of flood control, siltation, erosion, and drainage become more acute. Eroded hillsides and silt-laden streams are becoming common.

The Caspian forest is being destroyed at a rate of about half a million acres a year in exchange for an expensive supply of low-grade fuel. While Iran badly needs wood products and foreign exchange and while Europe pays high prices for quality oak, walnut, and beech, the Caspian forest is burning, rotting, and wasting away.

The present acute situation stems from confusion as to ownership of forest land and the consequent lack of proper forest management. For many centuries no one claimed the forest lands. In some instances village owners established certain grazing rights to the forests beyond the villages, but it was not until the late Reza Shah Pahlavi registered the

forest, fields, and villages in his own name that any personal ownership was established. Now about 10 percent of the forest is public land, another 25 percent is considered part of the Royal Domain. Title to about half of the forest in the Caspian region is said to be in dispute. This lack of established ownership has invited overexploitation.

Overexploitation will continue until the public recognizes that the forest is a natural resource of concern to all. The activities of research, education, and service to the public should be built up to a point where the people understand and are willing to accept conservation controls. And forest industries should be developed so that they contribute to the national welfare and not to the destruction of a national resource.

Foresters working under the technical assistance programs hope that they can make some contribution to public awareness. They hope, too, to help improve and develop the forest industries. Charcoal making can obviously be improved with better tools, kilns, and cutting practices, and experience has shown that charcoal should be produced along with sawlogs by using the slash and waste of the forest. The wood industries can be improved greatly by being set up in units large enough to operate efficiently and turn out products that can compete in an international market.

A further goal of foreign technical aid is to help strengthen the Forest Service by assisting in effecting a compromise between grazing rights and the preservation of the forests; by attracting competent men into the guard service—offering them better housing and equipment, for instance—and training them adequately; and by emphasizing professional forestry training. Actually, this training is well under way. At the Karadj Agricultural College, the forestry graduate course is being expanded and a wood technological laboratory is being built as a cooperative project of the college, the Seven Year Plan,¹ and the technical aid program. Special graduate study is also available through fellowships offered by FAO and Point Four.

If the goals of the Iranian foresters and their foreign counterparts are realized, Iran will have a sound forest program and a strong Forest Service to carry it out. And a thriving productive forest will be the heritage of generations to come.



A Caspian lumberjack, knee-deep in branches, hacks down trees for the charcoal industry.

¹ A comprehensive economic development program drawn up by the Overseas Consultants, Inc., of New York (an American economic planning organization) at the request of the Iranian Government.

Minor Element Deficiencies In Coffee In Costa Rica

by HAROLD MOWRY



It is now apparent that the minor elements—zinc, copper, manganese, boron, molybdenum, and others—are destined to play a major role in

overcoming some of the troublesome problems encountered in coffee culture in Costa Rica. Current research conducted by the Costa Rican Ministry of Agriculture is demonstrating that deficiencies of certain of these elements are a principal reason for the poor plant growth and the abnormal foliage and other growth characters that have seriously cut coffee production in many areas of Costa Rica.

Little was known about the importance of the minor elements to plant development 25 years ago. At that time, nitrogen, phosphorus, and potassium, and occasionally calcium, were considered the essential fertilizers, or soil conditioning materials, and the causes for the many plant abnormalities, unthriftiness, foliar chloroses, dieback, and even premature death among many species and varieties of cultivated plants were unknown. Many of us agronomists and horticulturists, when pressed for explanation, sought refuge in the vague answer that the troubles were "physiological." Though learnedly correct, such definition was not highly enlightening and neither plants nor growers benefited perceptibly from the diagnosis! We assumed that the minor elements, which enter into the composition of plant tissues in such small proportion, were available in all soils in amounts adequate to supply plant needs. The error of our assumption has been borne out not only by the findings in Costa Rica on coffee but also by findings in many other regions of the world on a great variety of crops ranging from grasses and leafy annuals to woody perennials.

In Florida, for example, whose agriculture I was privileged to serve for years, both commercial and ornamental plantings in many areas manifested abnormal, unthrifty growth, which could not be corrected by the use of common (NPK) fertilizers or by



The Ministry of Agriculture of Costa Rica was founded only a few years ago, and as a growing Institution needs the advice of people with deep scientific knowledge and broad experience in the organization and direction of technical programs.

Based on this needs we requested O. F. A. R. through the Point Four Program to send a qualified person to assist us in such matters. We are fortunate in having Dr. Harold Mowry as our collaborator and counsellor in response to this request. New patterns of activity have taken shape under Dr. Mowry's leadership, directed mainly toward the coffee crop problems that have been neglected in past.

For the first time in Costa Rican Coffee history, some of its great problems, such as the attack of fungus and bacterial diseases and the minor element deficiencies have been tackled in a realistic and scientific way.

The results of such work as the one with minor elements are promising. They will mean a basic increase in the coffee production of Costa Rica and other coffee growing countries, which in turn will strengthen our economies.

The Ministry of Agriculture of Costa Rica will always be in debt to its great friend Dr. Harold Mowry.

O. F. A. R.
O. F. A. R.
Ministry of Agriculture
and Industry.

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modification of cultural practices. When the symptoms were properly diagnosed as minor element deficiencies and corrected as such, plant thrift, yield and quality were improved. Even pasture grasses and forage crops benefited.

The response in these crops to specific supplemental applications of the minor elements leads to the conclusion that nutritional difficulties in plants are not plant problems; basically the trouble lies in the soil. It may contain an inadequate quantity of an essential element for a certain plant or it may contain it in a combination that makes it impossible for the plant to use it.

Few indigenous plants show symptoms of nutritional deficiencies. It follows that, ecologically, they have adapted their requirements, through long evolutionary periods, to their environment, including



Branch from a healthy coffee tree.

the mineral composition of the soil and the reaction and make-up of the soil complex. Nutritional difficulties begin to appear when plants are moved from region to region with little regard for anything but climate. Some plants find themselves at home in a new soil; others do not. For that reason, two species grown side by side on the same soil may react quite differently; one may thrive and the other may suffer from nutritional difficulties. This variation seems to stem, at least in part, from the diverse origins of the two species. Sometimes cultivated plants that have long thrived in an area suddenly begin to show symptoms of nutritional deficiencies. When this happens, it may be that continuous cropping, erosion, and leaching have depleted the soil of some elements.

The way in which each of the deficiencies presents itself is usually characteristic within a given variety or species. It may be quite different among species, however. For example, boron deficiency causes "internal cork" of apple, "crack-stem" of celery, and the "yellows" of alfalfa. And a lack of zinc causes "white bud" of corn, "frenching" of citrus, and "little leaf" of peach.

In Costa Rica, such deficiency symptoms are strikingly apparent on many plants. The symptoms, while by no means universally present, are widespread among some species and occur on both volcanic and lateritic soils. Malnutrition in any crop is of economic significance since it is usually accompanied by lowered production.

Costa Rica's average coffee yields, some 6 fanegas per manzana, are said to be the lowest in Central America. (A fanega equals 1.6 bushels; a manzana, 1.8 acres.) A production of 30 fanegas is exceptionally rare, and 10 to 12 is considered good. These yields are in strong contrast to those of 30 to 40 fanegas per manzana reported as common in the earlier days of the industry. Output is not uniform from year to year; good crops of one season are generally followed by poorer ones the next.

A pronounced condition of unfruitfulness, termed "cafe macho," prevails in some localities. The trouble has been recognized for many years and occurs most frequently in plantings on sloping, eroded soils. Affected areas are of variable size and irregular boundary. Thrift of the plants is from poor to fair and fruit is produced sporadically in negligible quantity or not at all. Deficiency symptoms are common, the intensity varying from slight to severe. Soil reaction is quite acid and the content of exchangeable bases low.

Weather, disease, insect infestation, and variability in the inherent productiveness of the plants (all are seedlings) may each or severally share in both irregular and lowered yields. But soil fertility and nutrition of the plants appear in most instances to have the dominant role. The combination of



Zinc deficiency in coffee: leaves are bunched, lance-shaped, and marked by a pale chlorotic pattern.

leaching and erosion by the heavy annual rainfall, coupled with long-continued cropping, undoubtedly has depleted soil supplies of some nutrient elements. And yet, generally, the responses from common fertilizers have not been as marked as would be anticipated. Composts are used extensively and to advantage, but, while they have had an ameliorating effect, neither they nor common fertilizers have corrected "cafe macho" or severe deficiency symptoms. In experiments with liming, blossoming has been induced and a good fruit set obtained in "cafe macho" plants.

The Costa Rican Ministry of Agriculture, under the administration of Claudio A. Volio, is keenly aware of the conditions prevailing in coffee fincas and of the need to develop research information that will lead to increased productivity and its maintenance. Experiments including the major and some of the minor elements were initiated in 1950 and later considerably broadened in scope by the Chief of the Department of Agronomy, Carlos A. Gonzalez. These investigations have been strikingly productive and have led to the identification of zinc, boron, and manganese deficiency symptoms in the coffee plant. Further deficiencies are suspected, but their symptoms have not yet been definitely ascertained. Dr. Paulo Alvin, of the staff of the Inter-American Institute of Agricultural Sciences,



Manganese deficiency in coffee: first symptoms appear on the second pair of leaves, which turn gold or bronze.

has identified an iron chlorosis. Each of the deficiencies is characterized by specific visual foliar symptoms or others, which, as a result of these findings, can now be readily recognized.

The zinc deficiency is widespread but apparently variable in intensity. On severely affected plants the leaves are abnormally small, sharply lanceolate, marked by a pale chlorotic pattern, and bunched at the nodes. Foliage of less affected plants is generally of normal size and shape, but exhibits the symptomatic pattern of chlorosis. The proportion of chlorotic foliage on such plants may be quite small.

Boron deficiency also is found over a wide area. Among its most conspicuous symptoms is the multiple branching—2 to 7 branchlets—of shoot terminals. A lack of boron apparently disrupts normal growth processes in the terminal bud. As a result it fails to develop or dies; other buds form around it and the fan, or brushlike branching, follows. A distinctive leaf chlorosis is present, too, in which the deep green color of the normal coffee leaf fades to a light olive green, the fading beginning at the apex and upper margins and spreading over most of the leaf. The unfaded portion of the leaf is much deeper green than normal; it is almost black. On



Boron deficiency in coffee: brushlike branching comes from failure of terminal buds to develop normally.

older leaves, especially those within the interior and deeply shaded parts of the plant, suberization of the midrib and lateral veins is not uncommon. This corky growth usually occurs on the under surface, although occasionally it is found on both sides of the leaf. The chlorotic and suberose foliage is coriaceous and many leaves are distorted and malformed. Small, irregular necrotic spots are present in many instances on young unfolding leaves. Die-back of twigs and branches is common in severely affected plants.

Manganese deficiency symptoms are foliar and have been observed only in restricted areas. The symptoms noted are seasonal in occurrence, appearing in August or September, and are progressive in intensity. Affected foliage is of a distinctive bronze or golden color and generally is first visible in the crown of the plant.

Corrective measures for the zinc, boron, and manganese deficiencies consist in either soil or spray applications of soluble forms of the needed elements. Plants respond more quickly to spray applications, and less chemical is needed. Nevertheless,

sprays may not be widely used: power spraying equipment is ruled out in much of the coffee acreage because of the rough, steep terrain and the close spacing of the plants; and the expense of knapsack spraying may make its use prohibitive. The comparative long-term efficacy of the two methods remains to be determined, however.

The findings on the minor elements are highly important to coffee culture in Costa Rica, in that they explain the cause of some heretofore baffling nutrition problems and show how to correct them. It is not implied that supplying the needed minor elements will in itself resolve all of the ills of poor thrift and low production in Costa Rica's coffee plantings. Rather it is indicated that with the correction of these deficiencies, and perhaps with the restoration in some instances of such soils bases as calcium and magnesium, much greater responses in plant vigor and yield can be had from common fertilizers. The investigations are as yet in the preliminary stages, but continuation and expansion of the research promise much in the improvement of Costa Rica's largest enterprise, its coffee industry.

Farm Credit Needs in Europe

by R. C. ENGBERG



Agricultural credit is highly important in the world-wide drive for greater production of farm products. The individual farmer rarely has the capital required to follow the procedures considered necessary for increased farm output. He needs to buy more livestock or modern machinery, better seeds and more fertilizer; and he needs funds for such farm improvements as consolidation, drainage, and buildings. Cooperatives, too, need larger, more modern facilities to handle and prepare the greater volumes of farm products for market. But all these large investments call for more cash than most farmers have; therefore, they must get it elsewhere.

In most countries, however, farmers find it difficult or impossible to get credit on terms they can afford. Even in Western Europe, where experience in farm credit is of long standing, farmers have often been unable to borrow money since the war, especially on long-term loan.

Realizing that Western Europe shares with much of the rest of the world the problem of how to in-

crease food production and seeing the problem solved, at least partly, by adequate agricultural credit, the Organization for European Economic Cooperation (OEEC) organized a survey of Western Europe's agricultural credit institutions in the spring of 1952 to determine if and how their services could be improved.

The 12-man survey team included four members from France, two each from Germany and the United States, and one each from the Netherlands, Italy, and Greece, and a member from the Food and Agriculture Organization of the United Nations. The FAO member was a Swiss. The two Americans came from the Farm Credit Administration and the Farmers Home Administration of the U. S. Department of Agriculture and were made available through the Mutual Security Agency. The countries visited by members of the team were France, Italy, Germany, Austria, Switzerland, Belgium, the Netherlands, Denmark, and Turkey.

Mr. Engberg, Chief, Economic and Credit Analysis Division, Farm Credit Administration, was a member of a group that surveyed Europe's agricultural credit needs in 1952.

Sources of Credit

Farmers in Europe obtain credit from a number of sources, including their own cooperative credit systems, savings banks, government banks, mortgage banks, and private lenders. In recent years the domestic currency equivalents of Marshall Aid¹ and government appropriations have been important additions to the credit supply. Commercial banks, too, are a source of farm credit but generally only for the larger farmers.

The cooperative credit institutions are a major source of credit to agriculture in most of Western Europe. The local credit cooperatives receive deposits and savings from farmers and others and loan the money to farmers in the community. In Germany, Austria, and some other countries, the majority of the local associations are organized under the Raiffeisen pattern with each member having unlimited liability for obligations of the cooperative. This feature tends to discourage membership by the larger farmers. In France, Belgium, and certain other countries the liability is generally limited.

The local credit cooperatives are usually small, too, serving only one or a few villages. Their aim is to keep costs at a minimum. They pay little or no salary to the manager and have few other expenses. Frequently, the local cooperative will have no office, and the manager will handle transactions at his home. Under study now are the possible advantages of consolidating the local credit associations or combining them with cooperatives that offer other services. Advocates of the larger-size association state that it permits employing more capable managers and providing more efficient service with full-time regular office hours.

But the small size of the locals is one reason for the good record of lending operations maintained by the credit cooperatives. Since no more than a few villages are usually served by each local, it is possible to do a careful job of screening applicants for loans. The unlimited liability feature also encourages a cautious and conservative loan policy. A loan committee member is not likely to approve a doubtful loan if part or all of his assets might be taken to make good any loss. Too, he owns capital stock in the association.

Under such circumstances, the credit cooperatives in Western Europe have had an excellent survival

record. They have come through wars, inflation, and depressions. In Austria, for example, it was reported that not a single Raiffeisen cooperative has failed since this pattern was adopted in about 1873. As a consequence, the cooperative credit institutions are well established, and they appear to have the confidence of farmers in the communities they serve.

The local associations are tied together by regional cooperative banks, which in turn are usually joined by a top bank at the national level. The regional and top banks move surplus funds, if any, to deficit areas and make the larger loans, including particularly loans to cooperative marketing and purchasing associations. The top banks usually are authorized also to rediscount agricultural notes with the central banking systems in order to supplement the supply of short-term funds. In addition, the top banks have power to issue bonds, and during normal times most funds needed for intermediate- and long-term loans have been obtained by the cooperative systems in this manner. In some countries there are separate farm mortgage banks organized for the purpose of making long-term loans. These institutions either obtain loan funds by selling bonds secured by farm mortgages or they make the bonds available to the borrower who in turn will sell them wherever he can.

Another important source of agricultural credit, particularly in Germany and to some extent in other countries, is savings banks. These generally have been chartered by towns or counties but in some instances by private sources. When they are chartered by towns and counties, there is no paid-in capital stock. Instead, the town or county guarantees the deposits and other obligations. This guarantee provides the confidence necessary to induce patrons to deposit funds for safekeeping. Savings banks are used mostly by the town people but in varying degrees by farmers also. The savings banks make loans to both town people and farmers from the funds deposited with them.

Availability of Credit

Before World War II, the cooperative systems, the savings banks, and other sources of credit apparently did a reasonably good job of mobilizing funds required to meet agricultural credit needs. Deposits were relatively large and bonds could be sold in the capital markets. War, inflation, and general uncertainty, however, have shrunk all of the resources. The market for securities has virtu-

¹So-called counterpart funds.

ally disappeared. As a part of the efforts to control inflation, the central banks have restricted the amount of farm paper, as well as of other types, that could be rediscounted.

Farmers have continued to make some deposits in their cooperative credit systems, however, and also in the savings banks, and these funds have been a major source of the short-term credit that has been available in recent years.

While the amounts of deposits fall far short of the demand for loan funds, it has been fortunate for farmers needing credit that savings have been made available in this form to the extent that they have; the experience of Europeans with war and inflation has encouraged them to put their savings in other forms.

In these circumstances, the supply of all types of credit is short in relation to the needs and the rates of interest that farmers can afford to pay, but the greatest shortage is in long-term and intermediate-term funds. Deposits cannot be used to any large extent for longer-term loans since sufficient liquidity must be maintained so that depositors can have their funds whenever they demand them. And, the agricultural paper that can be rediscounted with the central banks is limited mainly to short-term notes.

The opportunities for effective use of long- and intermediate-term funds, on the other hand, are great. One of the major problems in a large part of Europe is the fragmentation of farms. Both consolidation and the maintenance of consolidation require long-term credit. Major land improvements such as drainage and buildings also call for long-term financing. The modernization of marketing and processing facilities for agricultural products is still another important source of demand for intermediate- and long-term credit. For these reasons, a considerable portion of the so-called counterpart funds that have been earmarked for agricultural credit purposes has been used to meet the long-term needs.

The short supply of funds available for lending naturally has resulted in high market rates of interest. In Germany, for example, the rates on short-term loans have ranged between 8 and 12 percent since World War II. In Turkey loans from private lenders may carry an interest rate as high as 100 percent on an annual basis. Interest charges on counterpart and other loan funds handled through government banks generally are below the market rates.

Increasing Loan Funds

The approaches to the problem of increasing the supply of loan funds, discussed by the survey team, included measures for enlarging the supply from sources within each country and means of tapping foreign capital markets. With respect to internal sources, the basic requirement is to increase the savings to which farmers may have access. The cooperative credit systems were urged to conduct campaigns to induce farmers and others to increase their deposits. There is a need for efforts to restore the market for the bonds of the agricultural credit institutions also. Underlying such campaigns, of course, is the necessity for rebuilding confidence in the country's own currency and in general for increasing the rate of personal saving.

Since some rationing of credit is involved in the conditions described, questions were raised as to whether the share of the national supply of credit earmarked for agriculture was the optimum and whether the amounts available were used most effectively. Still another question was whether agriculture was having access to a reasonable share of pools of savings represented by invested reserves of life insurance companies and other invested trust funds.

Internal savings must be supplemented by foreign capital if the full credit demands of European farmers are to be satisfied. One channel through which this may be done, of course, is the International Bank for Reconstruction and Development. Another possibility is the establishment of a separate international bank for European agriculture. This possibility has been discussed in Europe for many years. The survey did not include a detailed analysis of the desirability and practicability of organizing such a bank, but the recommendation was made that a special group be organized by OEEC to study intensively the whole question of ways and means of making foreign capital available to European agriculture.

Suggestions were made regarding a number of other problems observed during the survey. One was the need for separate guarantee funds to assist in financing higher risks such as refugees, young farmers, and others with little capital of their own. There appeared to be an opportunity for greater use of chattel mortgages as a basis for credit. Other suggestions dealt with training of credit personnel, international study of land appraisal methods, and the apparent need for accumulation of reserves by the cooperative credit institutions.

The Native Egyptian Hatchery In a Poultry Improvement Program

By W. M. REID and AHMED DARDIRI

Baby chicks have been produced in Egypt for thousands of years in unique hatcheries that are so efficient and so suited to the country that they are being considered in Egypt's new National Poultry Improvement Program.

Every year, 99 percent of the country's baby chicks are hatched in the 500 native hatcheries, by methods that have been passed on from generation to generation. Operators live in the hatcheries during the incubation period and with no modern equipment accomplish a percentage of hatch that compares favorably with that of mechanical incubators.

Operational Methods

The hatchery is a mud-brick building through which runs a central corridor. On either side of the corridor are six or eight domed rooms, each of them a hatchery unit large enough for about 6,000 eggs. In the dome of each room is a vent about the size of a stovepipe, which is closed or opened by inserting or removing a wad of cloth. The rooms are of double-deck construction. The waist-high second floor has a central manhole in which the operator can work while transferring eggs from one deck to another.

On two sides of the upper deck smoldering straw fires on trays furnish heat for the incubation. These fires are lighted with burning coals brought in an earthen vessel from a fire that is kept burning in a special area of the plant. The straw fires burn during the first 11 of the 21 days of incubation. After the eleventh day, the only heat required to complete the incubation is furnished by the developing embryos and preserved within the double mud-brick outer walls and ceilings.

The operator of the hatchery keeps the temperature of the rooms uniform without the aid of a thermometer; he depends on his own sensitivity to changes in temperature. For that reason, he stays in the hatchery during the entire hatching season, usually sleeping in a room adjoining the incubator. If he senses a change in temperature, he tests the eggs by pressing one against his eyelid. If it is cool,

he adds straw to the fires or provides more draft by removing the rags from the flues, which are located below the fire trays. If the egg is too warm, he opens the ceiling vent.

All operations in the hatchery are carried out according to a traditional schedule. The operator follows the schedule to the letter and diligently attends the hatchery, for his income depends on the percentage of the hatch. Before he puts the eggs into the incubator, he sorts them and removes the cracked ones. Hatchery operators are highly skilled in detecting cracked eggs; they do so by gently clicking three or four eggs against each other in one hand. The cracked ones emit a sharper note than do sound ones. The exact hour at which the fire is set is considered highly important as is the regularity with which the eggs are turned and their positions changed in relation to the fire.

The operator candles the eggs on the seventh day using an oil lamp or by holding the eggs up to a beam of sunshine, which comes through the vent. On the thirteenth day, half of the eggs are moved from the lower to the upper deck and all of the eggs are spread out in a single layer. On the twenty-first day, the chicks begin to hatch and are moved at 3-hour intervals to walled-off areas on the floor of the central corridor. Here they are kept until they become active and are ready for shipment to village farms, often in palm-branch crates borne by donkeys.

Egg Size and the Native Hatchery

Native hatcheries have sometimes been blamed for the small size of the eggs in Egypt; they weigh on the average about 30 grams, only half as much as those of standard breeds. In years past, Egypt has had difficulty exporting these small eggs. It may be true that the farmer, contractor, and oper-

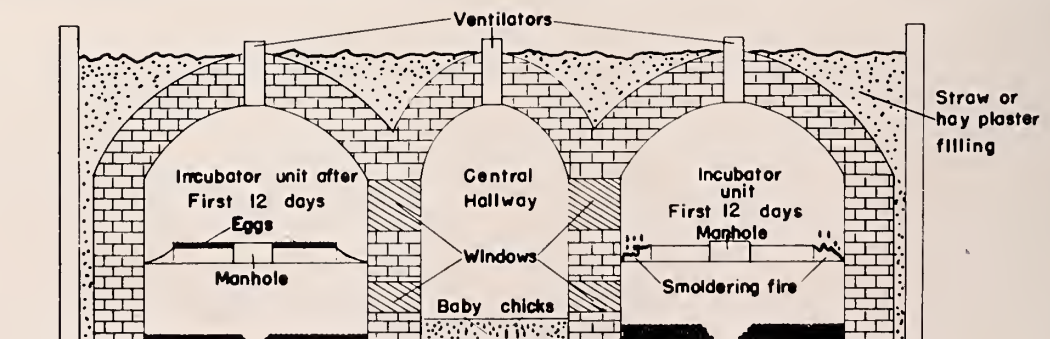
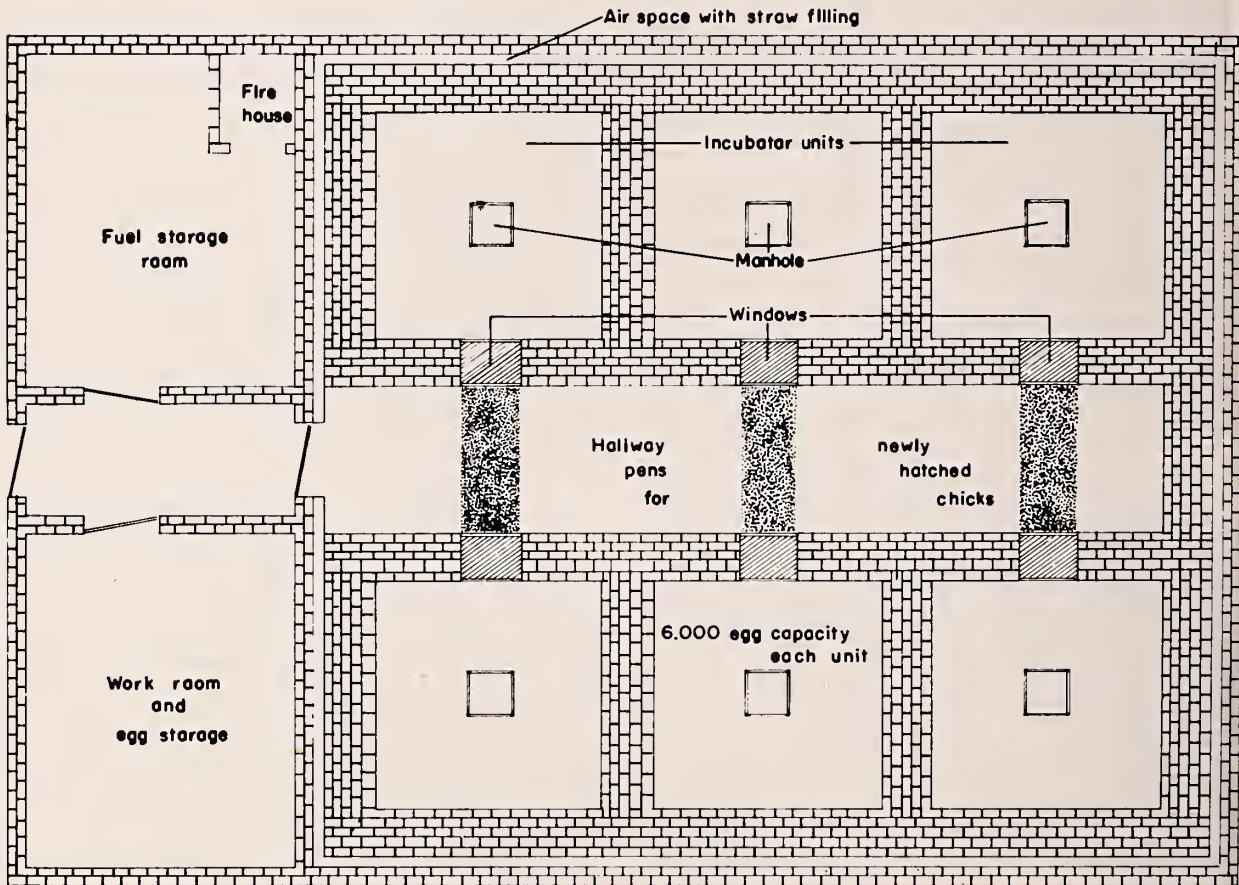
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ator eat the larger eggs and take only the small ones to the hatcheries, as is claimed, but eggs produced in nearby countries where these hatcheries are unknown have small eggs too.

A determined effort to select larger eggs for hatchery purposes was made by the Ministry of Agriculture some years ago. A mechanical device for selecting eggs of a 40-gram minimum was devised and an inspection program instituted. This program was abandoned when poultry losses be-

came excessive due to diseases. It seemed advisable to remove restrictions from the native hatcheries in order that more eggs would be incubated and more baby chicks would be produced each year. Efforts to increase production are still being made. For example, there are regulations that prevent shipment of eggs for food out of certain Provinces during the hatching season, November to May; it is assumed that with an egg surplus in these areas more eggs will be set in the incubators.



Native Egyptian hatchery: floor plan and cross section through two incubator units.



Every hatchery operator has his own way of recording essential information on each brooder unit. This man marks a cross outside the unit that was started on Sunday.



Hatchery operator tests egg temperature by holding an egg to his eyelid. His own sensitivity to changes in temperature is the only measure he has for regulating the heat in the hatchery.



Chicks are kept in the central hallway until they are sold. Buyers have no selection in breeds; chicks are of mixed breeding.

Role of the Native Hatchery In the Poultry Industry of Egypt

Egypt's poultry industry is based primarily on the flock owned by the small farmer. The small farm flock may consist of 6 to 20 three- to four-pound chickens of mongrel stock. The chickens are fed on scraps and scavenge for food in the village streets. There is no investment in equipment and very little expenditure for feed.

Chicks for these small farm flocks come from native hatcheries. Modern incubation equipment is being used on government poultry farms and by poultry establishments of the Amateur's Poultry Breeder's Association and educational institutions. But the equipment is largely imported, and the original capital expenditure and maintenance and operating costs are high. Such equipment cannot compete on an economic basis with the native hatchery in which a chick can be hatched for a few cents.

The native hatchery figures prominently in the government's plans to aid the small poultry farmer and through him to strengthen the country's poultry industry. Native hatcheries have been installed on government poultry farms for demonstration purposes and for study. Officials are discussing ways by which operators of the native hatcheries can be brought into the National Poultry Improvement Program that is being planned.

The Native Hatchery In a Breed Improvement Program

Until cheap power is available, native hatcheries will continue to hatch more than 99 percent of the eggs incubated in Egypt. Operators of these hatcheries not only furnish the bulk of the baby chicks for the Egyptian poultry industry, but they also constitute an important source of information on poultry raising for the farmer.

For that reason they could help persuade farmers to substitute high-producing standard breeds of chickens for native poultry by offering higher prices for eggs of the standard breeds. No general effort has been made to get the small farmer to raise these breeds. For many years the officials of Egyptian Government poultry farms and the wealthy amateurs have publicized the advantages of standard breeds. Problems of feeding and disease control in the villages have, however, prejudiced some poultrymen against the breeds. More recently limited demonstrations in the villages indicate that standard

breeds can be raised under village conditions, but further tests are planned to determine whether it is practicable to do so. These tests will be large-scale field demonstration projects conducted by several Egyptian institutions and agencies with the assistance of Point Four. Farmer-cooperators will be required to get rid of native cocks, report on diseases, and give back two eggs or one chick the following year for each chick received this year.

The Native Hatchery in a Disease Control Program

Diseases of both humans and animals have always been widespread in the Nile Valley, where large numbers of people and animals are concentrated on a narrow strip of land. Poultry is no exception; disease is responsible for Egypt's having lost its extensive export market in eggs. The peak years for egg exportation were 1924 and 1932, when more than 200 million eggs were sold. Now none are exported. Official figures indicate that the poultry population of Egypt has dropped 40 percent in the past 15 years.

Large flock owners have been especially concerned about the disease problem because their flocks are concentrated. The situation is perhaps more hopeful for the small poultry raiser whose few chickens are more isolated. Even many of them, however, have recently abandoned poultry production.

A concerted country-wide program of disease control is recognized as a major step toward restoring the poultry industry to its former place in the national economy.

The major unconquered disease of poultry in Egypt is Newcastle disease. Efficient vaccines are available and are being used in limited demonstration areas, where complete protection against the disease can be given. The vaccine cannot be given to baby chicks, however. If the newly developed intranasal vaccine now being produced in the United States were adopted in Egypt, 1-day-old chicks could be inoculated at the hatchery. In this way, hatchery operators would take part in the disease control program. Since their hatcheries are already supervised by the government, bringing the operators into the program would not be difficult.

With instruction, hatchery operators might also assist in the control of pullorum disease, as do operators of commercial hatcheries in other countries. Now, however, neither the farmers nor the hatchery

operators in Egypt know enough about the disease and its control to participate in a control program.

Future of the Native Hatcheries

The native Egyptian hatchery presents a unique opportunity for development of an educational and extension poultry program.

If the operators could be persuaded to participate in a short course on disease control, feeding practices, and the value of better genetic strains, conducted by some of the numerous well-trained Egyptian poultry scientists, the operators could serve as "extension agents" and pass on to small farmers information about good poultry management. When operators appreciated the need for proper diet for poultry and proper care of hatching eggs,

they could help induce farmers to adopt new ways that would benefit both farmers and hatcherymen. And they would correct the idea that percentage of hatch depends wholly on hatchery conditions.

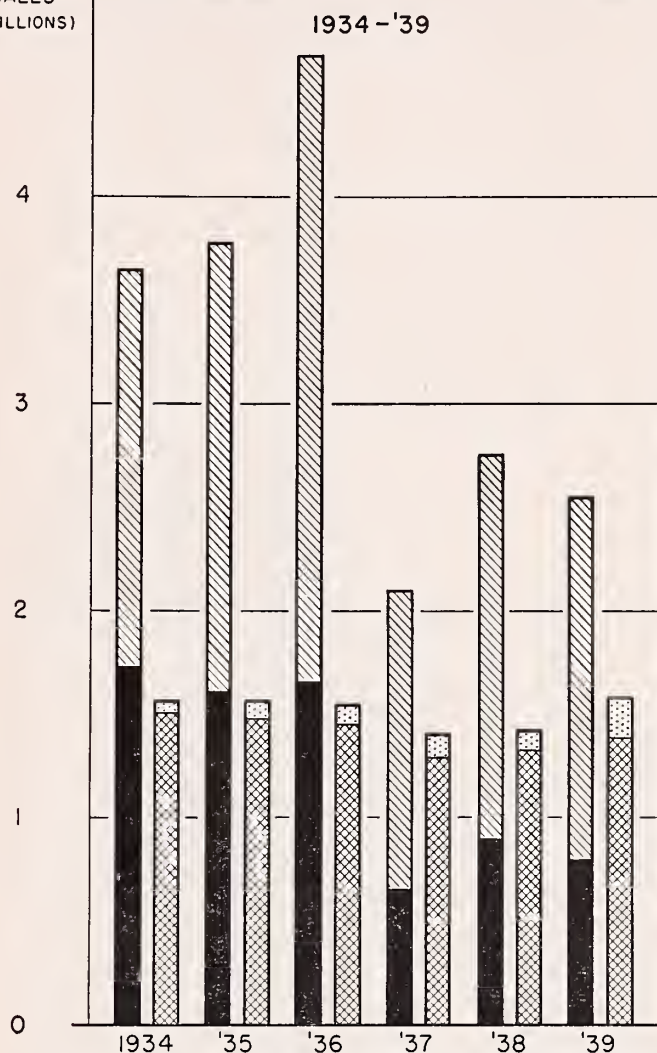
In other ways also the native hatcheries could greatly assist in the development of the poultry industry. For instance, operators might adopt uniform practices in extending credit and in making agreements with contractors; such uniformity would be possible if hatchery operators had a trade-union type of organization sponsored by a government agency. And, if hatchery operators knew more about significant new developments in the poultry field and adopted them, they could raise their own incomes as well as help increase poultry production.



Baby chicks are moved from hatchery to village in insulated palm-branch crates.

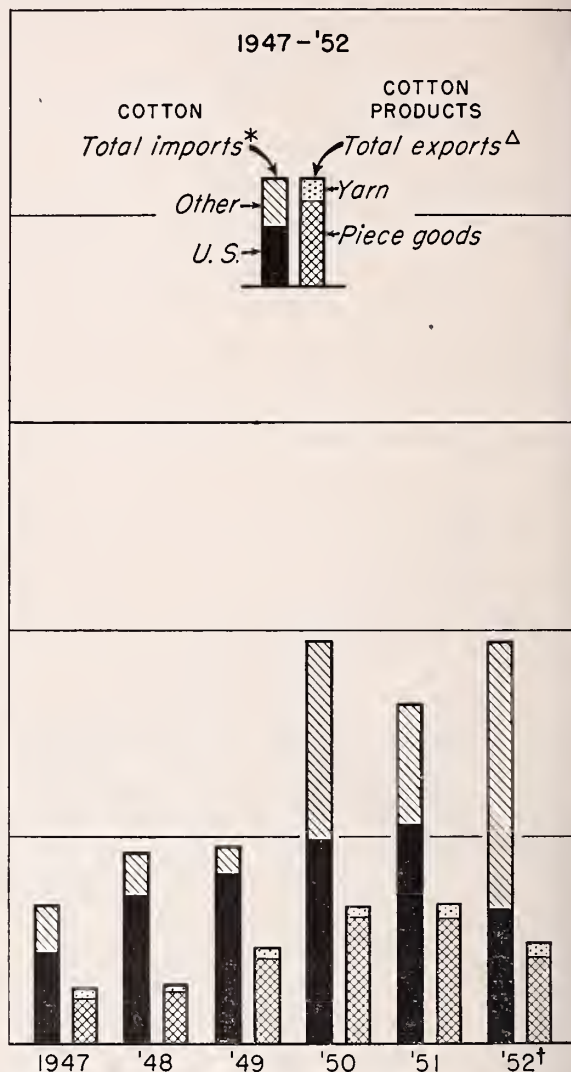
JAPAN: IMPORTS* OF COTTON AND EXPORTS^Δ OF COTTON PRODUCTS

BALES
(MILLIONS)



* IMPORTS ARE FOR CROP YEARS BEGINNING AUGUST 1.

^Δ EXPORTS ARE IN TERMS OF 500 POUND BALES OF RAW COTTON



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